



## SEQUENCE LISTING

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DOUCET, CHARLOTTE J.

<120> CARROT ANTIFREEZE POLYPEPTIDES

<130> F7371(C)

<140> 09/308,140  
<141> 1999-12-30

<150> PCT/EP97/06181  
<151> 1997-11-06

<150> EP 96308362.1  
<151> 1996-11-19

<160> 12

<170> PatentIn Ver. 2.1

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<212> PRT  
<213> Daucus carota

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1 5

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<400> 2  
Ile Pro Glu Glu Ile Ser Ala Leu Lys  
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<223> any, other or unknown amino acid

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           1                  5                  10                  15  
  
 ttc ctc tgc ctt cca aac ctc tct gca tca caa aga tgc aac aac aac 96  
 Phe Leu Cys Leu Pro Asn Leu Ser Ala Ser Gln Arg Cys Asn Asn Asn  
                   20                  25                  30  
  
 gac aag caa gct tta ctc caa atc aaa aca gcc ttg aaa aac ccc acc 144  
 Asp Lys Gln Ala Leu Leu Gln Ile Lys Thr Ala Leu Lys Asn Pro Thr  
           35                  40                  45  
  
 att aca gac tca tgg gtg tca gac gac gat tgt tgt ggt tgg gac cta 192  
 Ile Thr Asp Ser Trp Val Ser Asp Asp Asp Cys Cys Gly Trp Asp Leu  
           50                  55                  60

gtc gaa tgt gac gaa acc agc aac cgc ata att tcc ctc ata att caa	240
Val Glu Cys Asp Glu Thr Ser Asn Arg Ile Ile Ser Leu Ile Ile Gln	
65 70 75 80	
gac gac gaa gct ctc acc ggc caa atc cca cct cag gtg gga gac cta	288
Asp Asp Glu Ala Leu Thr Gly Gln Ile Pro Pro Gln Val Gly Asp Leu	
85 90 95	
cca tac ctc caa gcc tta tgg ttc cgt aaa ctc ccc aat ctt ttc gga	336
Pro Tyr Leu Gln Ala Leu Trp Phe Arg Lys Leu Pro Asn Leu Phe Gly	
100 105 110	
aaa atc cca gaa gaa att tct gca ctc aaa gac cta aaa tcc ctc aga	384
Lys Ile Pro Glu Glu Ile Ser Ala Leu Lys Asp Leu Lys Ser Leu Arg	
115 120 125	
ctc agc tcg acc agt ctc agt ggc cct gtc cct tta ttc ttc cct cag	432
Leu Ser Ser Thr Ser Leu Ser Gly Pro Val Pro Leu Phe Phe Pro Gln	
130 135 140	
ctt acg aaa cta act tgt tta gac tta tcg ttt aac aaa ctt ttg ggt	480
Leu Thr Lys Leu Thr Cys Leu Asp Leu Ser Phe Asn Lys Leu Leu Gly	
145 150 155 160	
gta atc cct cct cag ctt tcc act ctt ccg aac ctt aaa gcc ctg cac	528
Val Ile Pro Pro Gln Leu Ser Thr Leu Pro Asn Leu Lys Ala Leu His	
165 170 175	
tta gaa cgt aac gaa ctc acc ggt gaa atc ccc gat atc ttt ggg aat	576
Leu Glu Arg Asn Glu Leu Thr Gly Glu Ile Pro Asp Ile Phe Gly Asn	
180 185 190	
ttt gct gga tcc ccg gac ata tat ctt tcg cat aac cag ctc acc ggg	624
Phe Ala Gly Ser Pro Asp Ile Tyr Leu Ser His Asn Gln Leu Thr Gly	
195 200 205	
ttt gtt ccc aaa act ttt gct aga gca gat cca att agg ctc gac ttc	672
Phe Val Pro Lys Thr Phe Ala Arg Ala Asp Pro Ile Arg Leu Asp Phe	
210 215 220	
tca ggg aac aga cta gaa ggt gat att tca ttc ttg ttt ggg cct aaa	720
Ser Gly Asn Arg Leu Glu Gly Asp Ile Ser Phe Leu Phe Gly Pro Lys	
225 230 235 240	
aaa cgc ttg gaa atg cta gat ttt tca gga aac gtg ctt agt ttc aat	768
Lys Arg Leu Glu Met Leu Asp Phe Ser Gly Asn Val Leu Ser Phe Asn	
245 250 255	
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Phe Ser Arg Val Gln Glu Phe Pro Pro Ser Leu Thr Tyr Leu Asp Leu	
260 265 270	
aac cat aac cag atc agc gga agt ctg tcg agt gaa ttg gct aaa ttg	864
Asn His Asn Gln Ile Ser Gly Ser Leu Ser Ser Glu Leu Ala Lys Leu	
275 280 285	

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 Asp Leu Gln Thr Phe Asn Val Ser Asp Asn Asn Leu Cys Gly Lys Ile  
 290 295 300

cca aca ggg gga aac ctc cag aga ttc gac cgt acg gcc tat ctc cac 960  
 Pro Thr Gly Gly Asn Leu Gln Arg Phe Asp Arg Thr Ala Tyr Leu His  
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 20 25 30

Asp Lys Gln Ala Leu Leu Gln Ile Lys Thr Ala Leu Lys Asn Pro Thr  
 35 40 45

Ile Thr Asp Ser Trp Val Ser Asp Asp Asp Cys Cys Gly Trp Asp Leu  
 50 55 60

Val Glu Cys Asp Glu Thr Ser Asn Arg Ile Ile Ser Leu Ile Ile Gln  
 65 70 75 80

Asp Asp Glu Ala Leu Thr Gly Gln Ile Pro Pro Gln Val Gly Asp Leu  
 85 90 95

Pro Tyr Leu Gln Ala Leu Trp Phe Arg Lys Leu Pro Asn Leu Phe Gly  
 100 105 110

Lys Ile Pro Glu Glu Ile Ser Ala Leu Lys Asp Leu Lys Ser Leu Arg  
 115 120 125

Leu Ser Ser Thr Ser Leu Ser Gly Pro Val Pro Leu Phe Phe Pro Gln  
 130 135 140

Leu Thr Lys Leu Thr Cys Leu Asp Leu Ser Phe Asn Lys Leu Leu Gly  
 145 150 155 160

Val Ile Pro Pro Gln Leu Ser Thr Leu Pro Asn Leu Lys Ala Leu His  
 165 170 175

Leu Glu Arg Asn Glu Leu Thr Gly Glu Ile Pro Asp Ile Phe Gly Asn  
 180 185 190

Phe Ala Gly Ser Pro Asp Ile Tyr Leu Ser His Asn Gln Leu Thr Gly  
 195 200 205

Phe Val Pro Lys Thr Phe Ala Arg Ala Asp Pro Ile Arg Leu Asp Phe  
 210 215 220  
 Ser Gly Asn Arg Leu Glu Gly Asp Ile Ser Phe Leu Phe Gly Pro Lys  
 225 230 235 240  
 Lys Arg Leu Glu Met Leu Asp Phe Ser Gly Asn Val Leu Ser Phe Asn  
 245 250 255  
 Phe Ser Arg Val Gln Glu Phe Pro Pro Ser Leu Thr Tyr Leu Asp Leu  
 260 265 270  
 Asn His Asn Gln Ile Ser Gly Ser Leu Ser Ser Glu Leu Ala Lys Leu  
 275 280 285  
 Asp Leu Gln Thr Phe Asn Val Ser Asp Asn Asn Leu Cys Gly Lys Ile  
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 1 5 10 15  
 gac tta tcg ttt aac aaa ctt ttg ggt gta atc cct cct cag ctt tcc 96  
 Asp Leu Ser Phe Asn Lys Leu Leu Gly Val Ile Pro Pro Gln Leu Ser  
 20 25 30  
 act ctt ccg aac ctt aaa gcc ctg cac tta gaa cgt aac gaa ctc acc 144  
 Thr Leu Pro Asn Leu Lys Ala Leu His Leu Glu Arg Asn Glu Leu Thr  
 35 40 45  
 ggt gaa atc ccc gat atc ttt ggg aat ttt gct gga tcc ccg gac ata 192  
 Gly Glu Ile Pro Asp Ile Phe Gly Asn Phe Ala Gly Ser Pro Asp Ile  
 50 55 60  
 tat ctt tcg cat aac cag ctc acc ggg ttt gtt ccc aaa act ttt gct 240  
 Tyr Leu Ser His Asn Gln Leu Thr Gly Phe Val Pro Lys Thr Phe Ala  
 65 70 75 80  
 aga gca gat cca att agg ctc gac ttc tca ggg aac aga cta gaa ggt 288  
 Arg Ala Asp Pro Ile Arg Leu Asp Phe Ser Gly Asn Arg Leu Glu Gly  
 85 90 95  
 gat att tca ttc ttg ttt ggg cct aaa aaa cgc ttg gaa atg cta gat 336  
 Asp Ile Ser Phe Leu Phe Gly Pro Lys Lys Arg Leu Glu Met Leu Asp  
 100 105 110  
 ttt tca gga aac gtg ctt agt ttc aat ttc tcc agg gtg cag gag ttt 384  
 Phe Ser Gly Asn Val Leu Ser Phe Asn Phe Ser Arg Val Gln Glu Phe  
 115 120 125  
 cca ccc tct ttg aca tac tta gac ttg aac cat aac cag atc agc gga 432  
 Pro Pro Ser Leu Thr Tyr Leu Asp Leu Asn His Asn Gln Ile Ser Gly  
 130 135 140  
 agt ctg tcg agt gaa ttg gct aaa ttg gac ctg cag aca ttt aac gtc 480  
 Ser Leu Ser Ser Glu Leu Ala Lys Leu Asp Leu Gln Thr Phe Asn Val  
 145 150 155 160  
 agt gat aat aat ctc tgc ggc aag att cca aca ggg gga aac ctc cag 528  
 Ser Asp Asn Asn Leu Cys Gly Lys Ile Pro Thr Gly Gly Asn Leu Gln  
 165 170 175  
 aga ttc gac cgt acg gcc tat ctc cac aac agt tgc ttg tgt ggt gct 576  
 Arg Phe Asp Arg Thr Ala Tyr Leu His Asn Ser Cys Leu Cys Gly Ala  
 180 185 190

cca ttg cca gaa tgc tagttacat gcaaaatgtg ccttaagggtt atctttgtaa 631  
 Pro Leu Pro Glu Cys  
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tgagatatat tatgcagctc aaggcagagc aataagtttt cctaatttgt tatagtaaga 691  
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Thr Leu Pro Asn Leu Lys Ala Leu His Leu Glu Arg Asn Glu Leu Thr  
 35 40 45

Gly Glu Ile Pro Asp Ile Phe Gly Asn Phe Ala Gly Ser Pro Asp Ile  
 50 55 60

Tyr Leu Ser His Asn Gln Leu Thr Gly Phe Val Pro Lys Thr Phe Ala  
 65 70 75 80

Arg Ala Asp Pro Ile Arg Leu Asp Phe Ser Gly Asn Arg Leu Glu Gly  
 85 90 95

Asp Ile Ser Phe Leu Phe Gly Pro Lys Lys Arg Leu Glu Met Leu Asp  
 100 105 110

Phe Ser Gly Asn Val Leu Ser Phe Asn Phe Ser Arg Val Gln Glu Phe  
 115 120 125

Pro Pro Ser Leu Thr Tyr Leu Asp Leu Asn His Asn Gln Ile Ser Gly  
 130 135 140

Ser Leu Ser Ser Glu Leu Ala Lys Leu Asp Leu Gln Thr Phe Asn Val  
 145 150 155 160

Ser Asp Asn Asn Leu Cys Gly Lys Ile Pro Thr Gly Gly Asn Leu Gln  
 165 170 175

Arg Phe Asp Arg Thr Ala Tyr Leu His Asn Ser Cys Leu Cys Gly Ala  
 180 185 190

Pro Leu Pro Glu Cys  
 195